Introduction
Varietal winemaking has been a part of the culture of Brown Brothers since the beginning of the century, when the then State Viticulturist Francois De Castella convinced the late John Francis Brown to grow and make table wine from varieties such as Mondeuse, Graciano, Semillon and Cabernet Franc. This practice has continued in more recent years with the development of wines made from Colombard, Orange Muscat, Flora and Tarrango.

Brown Brothers intend to maintain our position as leaders in the field of varietal wines with the development of a range of wines made from Italian varieties, to complement the trend of consumption of Mediterranean style foods in Australia, and the greater acceptance of European culture. The range already includes Barbera, Dolcetto, Pinot Grigio and Nebbiolo.

It is also part of the philosophy of Brown Brothers to educate wine consumers to appreciate flavours and styles beyond the increasingly generic Chardonnay and Cabernet Sauvignon.

To achieve the above aims, Brown Brothers is blessed with the perfect natural resource on its doorstep: the King Valley. The Valley has a variable climate: the heat summation ranges from 1960 degree days at the winery (approximately 160 m above sea level) to only 1100 degree days on the Whitlands plateau, 35 km south of Milawa, at 800 m above sea level. There is an almost unlimited choice of grape growing sites between these two locations.

During the late 1970s, close associations were formed between the Brown family and local tobacco growers from the King Valley, mostly of Northern Italian origin, as the company expanded its access to grapes grown in cooler climates.

The Nebbiolo vineyard, owned and operated by Fred and Katrina Pizzini, is located 2 km south of Whitfield. It is situated on the upper slopes of a broad linear to convex colluvial mantle, having a gradient of approximately 15°, facing east. The parent hill rises steeply behind the vineyard to a height of 580 m, and consists primarily of rhyolite and undifferentiated acid volcanics dating from the upper Devonian period.

Climate
The middle to upper reaches of the King Valley south of Milawa have a similar climate in the growing season to that found in the northern regions of Italy such as Piedmont, Trento and Veneto. Figures 1 and 2 show the temperature and rainfall data for Alba in Piedmont, and Whitfield in the King Valley.

While Alba has a higher latitude and greater continentality resulting in very cold winters, the temperatures during the growing season are similar. These figures probably do not accurately reflect temperatures found in the hillside vineyards of Barolo and Barbaresco, which with good air drainage and elevation, are likely to have slightly milder spring and autumn temperatures, and a cooler summer.

Whitfield follows a similar trend in rainfall patterns, but receives higher rainfall in every month except November. The higher incidence of rain in March does not result in more botrytis, due to the intrinsic resistance of the variety to the disease.

The vineyard
The initial cuttings were obtained from CSIRO in 1985, and propagated at Charles Sturt University at Wagga Wagga. Approximately 200 vines were available for planting in 1987. In 1989 and 1990 scions derived from the initial planting were used to field graft Schwarzmann rootstocks, bringing the total area to two ha. The clone is the University of California (Davis) selection FVK6V1. The Australian Accession No. is IC 748242. We are currently unaware as to whether the clone has been typed into any of the common Italian subgroups for the variety, such as Michet, Lampia or Rosé.

The vines and rows are 1.5 and 3.0 m apart respectively. The initial four rows of own-rooted vines are arch cane pruned to four, eight-bud canes. The crown is at 1.0 m height with the arch wire at 1.5 m, and the cane attachment wire at 1.1 m. The trellis posts are 1.8 m high.

The section of vines grafted to rootstocks is pruned to a mid height Sylvoz system, with a single permanent cordon at 1.2 m.
Alternating six and one bud spurs are left with six, six-bud spurs per vine. Buds are quite unfruitful below the fourth node.

**Foliage management**

The shoots on arched cane-pruned vines are vertically positioned. The Sylvoz vines have approximately 30% of shoots positioned downwards. The first lift of foliage is done on approximately 20 October. In an average season, 2–3 trimmings are necessary; more are required in wet years. A Nairn leaf blower is used to remove leaves from the fruit zone on the eastern side of the vine.

**Phenology**

In a typical season, the vines go through the following growth stages as listed below:

- budburst: 10 September (this is earlier than Chardonnay; which makes Nebbiolo very frost-prone);
- flowering: 15–20 November;
- veraison: early February; and
- harvest: late April–early May.

**Pest and disease management**

Generally speaking, Nebbiolo requires the lowest input of spray of all the varieties grown in the Valley, including Malbec, Cabernet Sauvignon and Shiraz. It seems to have good resistance to both oidium and botrytis. A routine spray program of the application of copper and sulfur is used.

**Irrigation**

The vineyard is equipped with drip irrigation equipment, but no irrigation has been applied during the past three growing seasons. In other seasons, approximately 40 L per vine per week has been applied during the driest period between January and mid-March.

**Harvest**

We prefer to hand pick for the following reasons:

- the fruit is spread over a large area of the vine;
- the berries are very juicy and are easily damaged by beat-er rods; and
- the skins are easily sucked out by machine harvester fans.

The fruit easily ripens to 13.5–14.0°Bé, with a pH of 3.2–3.3. The arched cane-pruned vines yield approximately 8 kg/vine, and the Sylvoz vines approximately 6 kg/vine.